PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-092252
(43)Date of publication of application : 07.04.1995

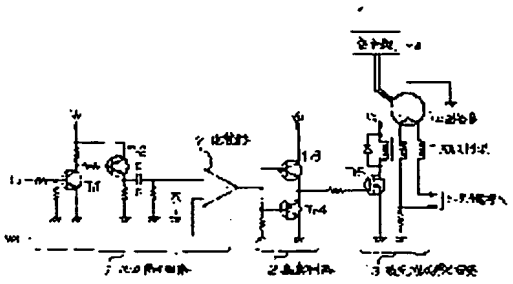
(51)Int.Cl. G01S 7/282

(21)Application number : 05-259406
(22)Date of filing : 22.09.1993

(71)Applicant : JAPAN RADIO CO LTD
(72)Inventor : SEKIMOTO SETSUO

(54) RADAR TRANSMITTER FOR VESSEL

(57)Abstract:
PURPOSE: To obtain a radar transmitter wherein an object target which is displayed on a radar screen can be adjusted easily to an optimum size by a method wherein the differential signal voltage of a transmitted trigger is compared with a continuously variable pulse-width control voltage level and transmission pulses whose width corresponds to the voltage level are output.
CONSTITUTION: A pulse generation circuit 1 waveform-shapes a transmitted trigger TI by transistors Tr1, Tr2, the trigger is differentiated by a differentiating circuit C, R, and the trigger is input to a comparator 7. In the comparator 7, a differentiated signal waveform is sliced by a pulse-width control voltage VP1 whose voltage level is continuously variable by a manual operation, and a pulse voltage whose pulse width is changed continuously is generated. Thereby, a radar screen is set to be in, e.g. a middle-distance range, and the pulse width of transmitted pulses can be changed continuously up and down by making use of the pulse width of transmitted pulses for a middle distance as a reference. In addition, short pulses for a short distance and long pulses for a long distance can be changed continuously, and the size of an object target on the radar screen can be adjusted easily to an optimum size.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

CLAIMS

[Claim(s)]
[Claim 1] In the radar transmitter for vessels which answers a transmitting trigger, generates the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage given from a directions machine, and is transmitted ; As for said pulse width control voltage given from a directions machine, adjustable is continuously possible for the voltage level by manual operation.; The pulse generating circuit which answers a transmitting trigger and generates a transmitted pulse Circuit which differentiates a transmitting trigger; Circuit which outputs the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage concerned by the level comparison with said differential signal level and said pulse width control voltage in which adjustable is continuously possible; Radar transmitter for vessels characterized by constituting.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to amelioration of the pulse generating circuit of the modulator which starts the radar transmitter for vessels, especially carries out pulse excitation of the transmitting tube.
[0002]
[Description of the Prior Art] By the radar for vessels, have a transmitter as shown in drawing 3 , classify a distance range into short distance, middle distance, and a long distance, and it enables it to change the width of face of a transmitted pulse for every distance range, and is made to make proper magnitude of the target displayed on a radar screen.
[0003] Namely, although the transmitted pulse which answers the transmitting trigger TI and a pulse generating circuit 30 outputs in drawing 3 is high-pressure-ized in the high-pressure pulse generating circuit 3 through the drive circuit 2, this excites the transmitting tube 4, a pulse oscillation is made to perform and a pulse-like electric wave is transmitted from aerial 5 Since the pulse width control voltage VP 2 of the voltage level according to the distance range (for example, short distance, middle distance, three sorts of long-distance distance range) set to the pulse generating circuit 30 by the manual operation in the directions machine which is not illustrated is given A pulse generating circuit 30 answers the transmitting trigger TI, and generates the transmitted pulse of the width of face corresponding to the voltage level of this pulse width control voltage VP 2, and the electric wave of the pulse width according to the distance range which carried out a manual operation setup with the directions machine is transmitted.
[0004] In addition, the conventional pulse generating circuit 30 consists of a square wave oscillator, a counting-down circuit which carries out dividing of the output of a square wave oscillator, and a selection circuitry which answers the transmitting trigger TI and performs selection of the dividing output according to the voltage level of the pulse width control voltage VP 2.
[0005]
[Problem(s) to be Solved by the Invention] Although it classifies classifying a radar range three times etc. roughly, they assign one predetermined width-of-face transmitted pulse for every classified distance range of the and it specifies them gradually in a directions machine by the conventional radar for vessels as mentioned above When observing a target on a radar screen, transmitted pulse width of face has the problem that it is difficult to adjust the target displayed since it could not change gradually in the optimal magnitude.
[0006] This invention was made in view of such a problem, and the purpose is in offering the radar transmitter for vessels which can be changed continuously about transmitted pulse width of face.
[0007]
[Means for Solving the Problem] In order to attain the aforementioned purpose, the radar transmitter for vessels of this invention has a configuration like a degree. Namely, the radar transmitter for vessels of this invention In the radar transmitter for vessels which answers a transmitting trigger, generates the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage given from a directions machine, and is transmitted ; As for said pulse width control voltage given from a directions machine, adjustable is continuously possible for the voltage level by manual operation.; The pulse generating circuit which answers a transmitting trigger and generates a transmitted pulse Circuit which differentiates a transmitting trigger; Circuit which outputs the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage concerned by the level comparison with said differential signal level and said pulse

width control voltage in which adjustable is continuously possible; It is characterized by constituting.
[0008]
[Function] Next, an operation of the radar transmitter for vessels of this invention constituted is explained like the above. The pulse width control voltage given to a pulse generating circuit from a directions machine can be made to carry out adjustable [of the voltage level] by manual operation continuously, and it is made for the pulse generating circuit to have outputted the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage concerned in this invention by the level comparison with the differential signal level which differentiated the transmitting trigger, and said pulse width control voltage in which adjustable is continuously possible.
[0009] Consequently, since transmitted pulse width of face can be continuously changed by the manual operation in a directions machine, it can perform easily adjusting the target displayed on the radar screen to the optimal magnitude.
[0010]
[Example] Hereafter, the example of this invention is explained with reference to a drawing. Drawing 1 shows the radar transmitter for vessels concerning one example of this invention. In drawing 1 , this radar transmitter has the composition that a pulse generating circuit 1 differs from the former, although it is the same as usual after the drive circuit 2.
[0011] In a pulse generating circuit 1, the transmitting trigger TI (drawing 2 (a)) is shaped in waveform in a waveform shaping circuit (Tr1, Tr2) (drawing 2 (b)). A differential signal as differentiated it in a differential circuit (C, R) and shown in drawing 2 (c) is acquired. As a comparator 7 is shown in drawing 2 (d), the voltage-level comparison with the pulse width control voltage VP 1 from this differential signal and a directions machine is performed, and the transmitted pulse of width of face according to the voltage level of the pulse width control voltage VP 1 is formed.
[0012] The high-pressure pulse generating circuit 3 consists of FET switch slack Tr5 by which a series connection is carried out to a primary a pulse transformer T and this pulse transformer T side.
[0013] The output pulse electrical potential difference of a pulse generating circuit 1 is impressed to that gate through the drive circuit (Tr3, Tr4) 2, and Tr5 carries out an on-off action, and makes the secondary of a pulse transformer T generate a high-pressure pulse voltage in this high-pressure pulse generating circuit 3.
[0014] The transmitting tube 4 is connected to the secondary of a pulse transformer T, a pulse oscillation is carried out with a high-pressure pulse voltage, and a pulse-like electric wave is transmitted from aerial 5 as usual.
[0015] Although the distance range of a radar screen can be set up here as usual with a directions machine at a short distance range, a middle distance range, a long distance range, and a three-stage, the pulse width control voltage VP 1 given to a pulse generating circuit 1 has come to be able to carry out adjustable [of the voltage level] continuously by manual operation in the set-up distance range.
[0016] As shown in drawing 2 (d), since the pulse voltage of the width of face of the location where the pulse width control voltage VP 1 slices a differential signal wave form is generated, if the voltage level of the pulse width control voltage VP 1 is changed continuously, in a comparator 7, the pulse voltage from which slice width of face changes continuously according to it, and pulse width changes continuously can be generated.
[0017] Therefore, the radar screen is set for example, as a middle distance range, on the basis of the pulse width of the transmitted pulse for middle distance, it continues up and down, and the pulse width of a transmitted pulse can be changed, and between the short pulse for short distance and the long pulses for long distances can also be made to be able to change continuously, and the magnitude of the target in a radar screen can be adjusted the optimal easily.
[0018]
[Effect of the Invention] As explained above, the radar transmitter for vessels of this invention The pulse width control voltage given to a pulse generating circuit from a directions machine can be made to carry out adjustable [of the voltage level] by manual operation continuously. Since it is made for the pulse generating circuit to have outputted the transmitted pulse of the width of face corresponding to the voltage level of the pulse width control voltage concerned by the level comparison with the differential signal level which differentiated the transmitting trigger, and said pulse width control voltage in which adjustable is continuously possible It is effective in the optimum coordination of the magnitude of the target displayed on the radar screen becoming easy.

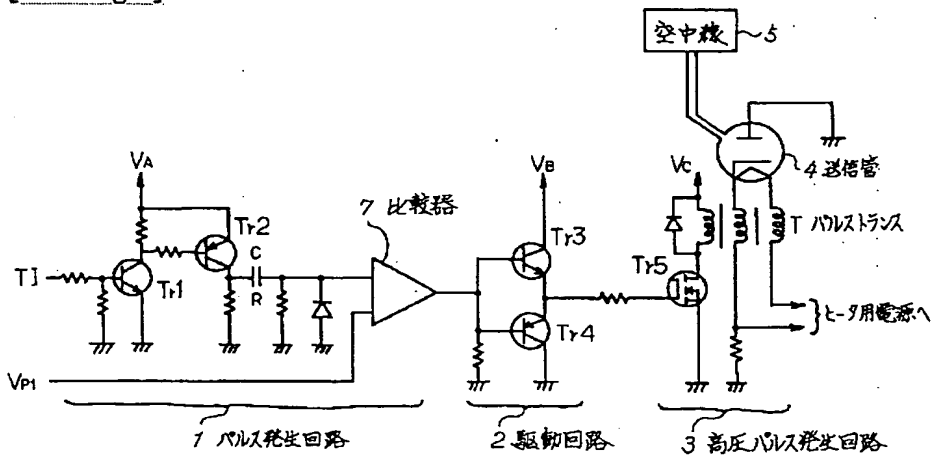
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the circuit diagram of the radar transmitter for vessels concerning one example of this invention.
[Drawing 2] It is the wave form chart of the pulse generating circuit of this invention of operation, and the wave form chart of the transmitting trigger which (a) inputs, and (b) are [the output wave form chart of a differential circuit and (d of the wave form chart of the transmitting trigger after waveform shaping and (c))] the I/O wave form charts of a comparator.
[Drawing 3] It is the common configuration block Fig. of the radar transmitter for vessels.
[Description of Notations]
1 Pulse Generating Circuit
2 Drive Circuit
3 High-Pressure Pulse Generating Circuit
4 Transmitting Tube
5 Aerial
7 Comparator
C Capacitor
R Resistance
T Pulse transformer
TI Transmitting trigger
Tr1-Tr5 Transistor
VP1 Pulse width control voltage

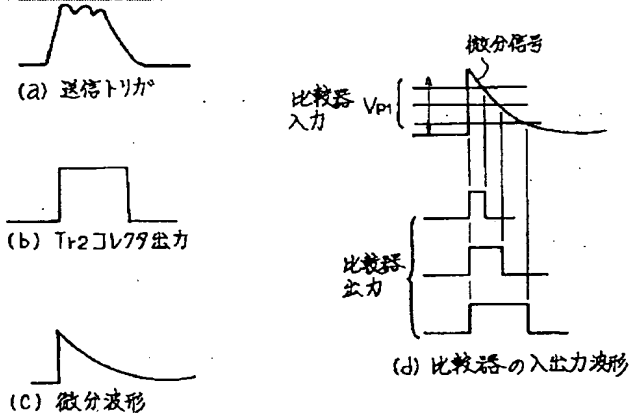
[Translation done.]

DRAWINGS

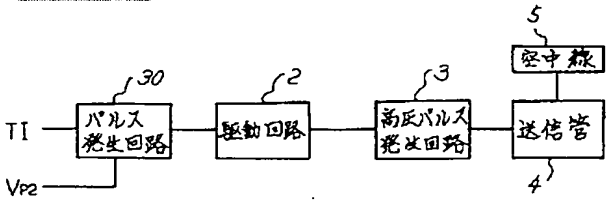
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]